

Hawaii Guard Rehabs Maui Range

WHEN LTC Ron Swafford said he was taking the staff of the Hawaii Army National Guard Environmental Office on a “retreat,” he wasn’t speaking of secluded cabins, babbling brooks, fishing poles and a lot of R&R. This encounter with nature involved a week’s worth of 10-hour days laying more than nine tons of geotextiles over 1,000 meters of prime real estate on Maui’s Ukumehame Weekend Training Site.

UWETS is a 39-acre, coastal, local-training area containing marksmanship ranges and a small maneuver area.

“Currently, the range berms are bare, making them highly susceptible to erosion,” said Melissa Dumaran, Hawaii National Guard natural resources manager. “During heavy wind

or rains, the topsoil from these berms may contaminate adjacent ocean and beach areas.”

The environmental team from Fort Ruger laid approximately 10 acres of a geotextile called geojute on UWETS’ two 500-meter berms. Geojute is a loosely braided fabric used like a blanket to control erosion. After being applied to loose or bare earth and becoming wet, it binds with the soil — preventing erosion and providing a stable surface for seeds to grow.

The crew rolled the material from the back of a truck and pinned the fabric onto eroded firing berms with staples. The job took 347 man-hours to complete but saved the Guard an estimated \$10,000 in commercial labor costs. The erosion-control project is the first phase of a long-term, multimillion dollar landscaping, conservation and improvement plan for

HIARNG’s only Maui firing range. — *CPT Steve Lai, environmental awareness manager, Fort Ruger, Hawaii*

New Amphibious Craft Promotes Research

UNDETERRED by the morning’s chilly rain — or warnings about ticks, mud, high tide and possible chemical contamination of the surrounding marsh sediments — visitors tucked their pants into their boots, sealing any openings with duct tape, and stepped onto temporary walkways.

Led by Lisa Olsen of the U.S. Geological Survey — and at the invitation of USGS and the Aberdeen Proving Ground, Md., Directorate of Safety, Health and the Environment — they had come to view the USGS Hoverprobe 2000.

The visitors, from the Maryland Department of the Envi-

ronment and the U.S. Army Environmental Center, heard the pitch (“21 feet long,” “can travel more than 30 miles per hour,” “carries 2000 pounds,” “rides on a cushion of air”) but knew this was no luxury ship. Instead, the Hoverprobe is the first combination of an amphibious hovercraft with multisonic drilling equipment to allow sediment and groundwater sampling in previously inaccessible environments.

USGS’s Dan Phelan and other scientists were conducting water quality sampling in the West Branch Canal Creek marsh when the visitors arrived to see the craft. USGS and the Directorate of Safety, Health and the Environment are working together to better define the extent of groundwater contamination in the marsh. Phelan explained that the craft has collected sediment cores and groundwater samples up to depths of 60 feet. In all, about 12 sites in the Canal Creek area will be tested.

From the coring and groundwater sampling emerges a layered history of the tested area, providing information applicable to a variety of issues. Phelan said that Hoverprobe techniques could be applied to other areas, such as the study of *Pfiesteria* colonies in Chesapeake Bay. *Pfiesteria* are tiny organisms that have caused recent fish kills in the region.

The Hoverprobe’s drill, plunging directly through an opening in the boat’s center, uses high frequency vibrations to increase effectiveness and minimize contamination of sediments. No liquids are used, so scientists can maintain the integrity of the sediment samples. Also, the Hoverprobe generates no drill cuttings, which minimizes waste that could also contaminate the site.



Field technicians Fred Pimentel (left) and Scott Mattson lay a roll of geotextile over an earthen berm at Maui’s Ukumehame Weekend Training Site.

Melissa Dumaran



The innovative Hoverprobe 2000 allows scientists to conduct sampling in previously inaccessible environments.

Phelan explained that Hoverprobe developers have pursued a patent for the craft, and plans are under way to build another for the USGS.

Before the Hoverprobe, scientists collecting samples in marshy areas had to build docks, separate the drill rig into manageable pieces, put it back together and hope for a forgiving tide.

Now, Phelan said, a truck pulls the Hoverprobe to a convenient location. Once shifted into hover mode, the craft slides off the trailer and can be driven over land, water or mud to the appropriate sampling area. The craft is highly mobile. "We can put all the thrust of the fans to lift the boat to literally push it in circles. We can tie a rope to it and pull it in any direction to remove it from the tight places we've put it in," Phelan said. — *Mia Emerson, Potomac Research International*

Engineers Restore Wetlands

FOR much of the last hundred years, the effectiveness of

Washington state's Deepwater Slough wetland has been limited because levees were used to alter the region for navigational purposes. The loss of water channels created a less suitable habitat for fish and other wildlife.

Breaching the four most remote levees to restore that habitat called for the special skills of Army combat engineers.

Through its partnership with Washington State Department of Fish and Wildlife, the U.S. Army Corps of Engineers, Seattle District, turned to the 14th Engineer Battalion and the 168th Engr. Bn. at Fort Lewis. Both battalions participated in the project, with technical assistance from a special forces team from Fort Campbell, Ky., and several rangers from Fort Lewis.

The Washington State Department of Fish and Wildlife manages the Skagit River Wildlife Refuge, approximately 50 miles north of Seattle. Located at the mouth of the Skagit River flowing into Puget Sound, the refuge is subject to both river and tidal influence. The

Deepwater Slough lies within this 1,400-acre-plus refuge.

"This estuary delta is a key to the salmon life cycle," said Bruce Sexauer, a Seattle District civil engineer. "It provides a place for the salmon to acclimate themselves as they gradually encounter more and more of a salt water mix on their way to the Puget Sound and the Pacific Ocean."

In preparation for the restoration project, the Seattle District and the state studied input from state and federal agencies and local Indian tribes. The study recommended constructing new levees, rehabilitating existing ones and breaching nine others, including four remote levees.

The breaches needed to be about 50 feet long and cut through levees as deep as 10 feet. The Army estimated it would take 5,000 pounds of hand-placed explosives to accomplish the mission. To avoid depleting unit supplies, and to enhance the engineers' training, the Army used civilian explosives.

The logistics of the mission

presented some challenges. Not only did the soldiers have to transport people, explosives and associated equipment in small boats, but a five-boat team had to block off the surrounding channels to ensure that no one accidentally gained access to the blast area.

The soldiers used chainsaws, axes and machetes to clear the levees of trees and bushes and to make way for the boats. The foliage was so thick in some places that soldiers had to cut through the brush while standing in their boats.

Once the soldiers cleared enough ground to place the charges, they drilled 3- to 6-foot-deep holes with a four-person power auger and cleared the debris with post-hole diggers and shovels.

Because each blast had to be small, the soldiers received extensive experience by placing many charges. The engineers trained on a considerable amount and variety of explosives, and the condition of the refuge was significantly enhanced. — *CPT Glen Reed, USACE, Seattle District*



Soldiers breached the levees with explosives (above) after first learning to correctly and safely place the charges (right).

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